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ALASKA AGRICULTURAL EXPERIMENT STATIONS

SITKA, ALASKA

Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 8

**BRIEF HISTORY
OF CATTLE BREEDING IN ALASKA**

BY

C. C. GEORGESON

Formerly Director of the Alaska Agricultural Experiment Stations



Issued January, 1929



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1929

**ALASKA AGRICULTURAL EXPERIMENT STATIONS, SITKA, KODIAK,
FAIRBANKS, AND MATANUSKA**

[Under the supervision of the Office of Experiment Stations, United States Department
of Agriculture]

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By C. C. GEORGESON, *Formerly Director of the Alaska Agricultural Experiment Stations*¹

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INTRODUCTION

So far as is known the Russians were the first people of the Caucasian race to settle in Alaska. They early recognized the possibilities of Alaska for stock-breeding purposes and imported cattle from Siberia in the belief that the animals could be made to sustain themselves on the lush pastures abounding here and there in the new country. Cattle raising was in progress at each of the principal Russian settlements, including Kodiak, Kenai, Ninilchik, and Sitka, when the United States purchased the Territory from Russia in 1867. Some cattle were introduced from the States after the American occupation, but representatives of the original Russian stock were still in evidence when the first agricultural experiment station was established at Sitka in 1898. All the cattle at Kenai and at Ninilchik, on Cook Inlet, were descendants of those that had been introduced from Russia, and their progeny are still to be found at Ninilchik.

The animals were small, slim in all proportions, and had a narrow head with thin, upright horns. The average weight of the mature

¹ Retired Jan. 1, 1928.

cow was about 500 pounds. In color the stock was brown, or dark red, and occasionally the body was mottled. The milk yield was low and had a fat content of about 3 per cent. The cattle had deteriorated not only in general conformation, but also in milking qualities and in suitability for beef production.

In 1906 when the Galloway breed was established by the stations as a foundation stock at Kalsin Bay, 15 miles from Kodiak, it was learned that cattle in considerable numbers had at some time in the past been maintained there by the Russians. The most convincing evidence supporting this fact was the discovery in the region of a large pile of thoroughly decayed cattle manure. The Russians, realizing that about 5,000 or 6,000 acres of land at the head of Kalsin Bay were adapted to cattle raising, had probably used the place as a breeding center whence they distributed stock to the settlements throughout the coast region.

A few head of cattle of the dairy type were introduced with the establishment of salmon canneries at various points along the coasts. Some of the descendants of these animals remained in the country. At Kodiak, Sitka, Kenai, and other places where Americans had settled, a few head of cattle were kept for the supply of milk. More cattle were introduced into the country with the development of new settlements and camps. Dairies sprang up in the towns to meet the local demands for milk. These cattle, however, were maintained, excepting for the small amount of pasturage available during the summer, on feed which had to be imported from Seattle for the purpose. This is the situation even to-day, but it does not show that cattle can not be supported by locally produced feed.

The winter maintenance of cattle is a matter that must be given careful consideration in all parts of the Territory. Experiments with the silo at the Kodiak station were so successful that winter feeding was not found to be the perplexing problem it would have been had the cattle been dependent upon hay and grain shipped in from Seattle. Any kind of green forage can be made into silage. Grown with peas or vetches, oats make excellent silage. The native grasses, especially wild beach rye (*Elymus mollis*) and a tall sedge (*Carex cryptocarpa*), have been relied upon for silage at Kodiak, sometimes supplying 90 to 95 per cent of the material put up annually. Sunflowers and horse beans have been successfully made into silage at Matanuska. Artichokes for silage have been grown at each of the stations. The tops are especially well suited to silage making in that the yield is heavy. In seasons unfavorable for haymaking, native bluetop (*Calamagrostis lanquidrofii*) is utilized to some extent for silage. At times the silo at Kodiak has been kept filled with about one-third each of sedge, beach grass, and field crops consisting of oats, peas, barley, and vetch. At Matanuska, in 1925, 2-year-old heifers daily gained in weight and kept in thrifty condition when they were fed 16 pounds of silage, 8 pounds of straw, and 5 pounds of roots. Cows were maintained in a fair flow of milk when they were fed daily per 1,000 pounds of body weight, 25 pounds of silage, 10 pounds of straw, 12 pounds of roots, and 4 pounds of barley-oat chop.

To-day the Alaska stations are maintaining a few head each of the Galloway and the Holstein-Friesian breeds. The Galloways are kept

at Kodiak and the Holstein-Friesians and crossbred Galloway-Holsteins at Matanuksa. Some yak are being maintained at Fairbanks for crossing with Galloways.

THE LIVESTOCK SITUATION IN ALASKA IN 1898

A few head of cattle were to be found at every settlement of white people in Alaska in 1898. The natives, of course, knew nothing about livestock, and, in fact, they were afraid of cattle. Albin Johnson and his coworker, Karl Hendrickson, Lutheran missionaries, reported from Yakutat that they kept six head of cattle which thrived on the abundant, nutritious pastures there, and required no additional feed from outside sources. These gentlemen also stated that, notwithstanding the difficulty they had in curing hay on which to winter the stock, they succeeded fairly well in drying the native grasses on horizontally arranged tiers of poles. The grass was piled in masses 1 to 2 feet thick, to permit the air to circulate freely between the tiers, and the final layer of grass served as the roof. Fairly good silage material was had by storing the grasses in a crude silo made air-tight by filling the spaces between the double walls with sand. It was further reported that at Seatuck, 25 miles from Yakutat, there were thousands of acres of land which might well be utilized to pasture many hundred head of cattle during the summer.²

Approximately 20 head of cattle were kept on a ranch 2 miles from the town of Kodiak by F. F. Feeney. To solve the problem of providing feed for his animals in winter, Captain Feeney erected a silo consisting of a square frame structure the walls of which were not air-tight. Considerable of the forage nearest the walls was lost, but the greater part of it ensiled well.

Curtiss P. Coe, superintendent of the Baptist orphanage on Wood Island, near Kodiak, stated that he kept several head of cattle which did very well, and that he built a silo which in part solved the problem of winter feeding.

M. L. Washburn, agent for the Alaska Commercial Co. at Kodiak, advised the station in 1899 that his company maintained a herd of about 60 head on two near-by islands named Ukamak and Long Island. Mr. Washburn said the cattle were stall fed from two to six weeks each winter and that they maintained themselves on pasture during the rest of the year. In occasional winters the stock was wholly on pasture. Fully 75 per cent of the calves dropped in this herd were raised. Mr. Washburn further stated that the cattle on Long Island were housed only during the short period when they were stall fed. The company's herd of some 20 head on Ukamak Island was neither fed nor given shelter during the winter season, and their increase was fully as good as that of the herd on Long Island.

At Kenai in 1898 Ivan Bortnowski kept some cows. At Ninilchik there were 25 head of cows of the Siberian type already referred to. At Wrangell, H. C. Tait owned a small dairy herd. Mr. Tait shipped

² PIPER, C. V. GRASS LANDS OF THE SOUTH ALASKA COAST. U. S. Dept. Agr., Bur. Plant Indus. Bul. 82, 35 p., illus. 1905.

in his feed, but stated that the cost of shipping was so great as to leave little profit. At Juneau a small dairy herd was kept wholly to supply the local demand for milk. At Haines another small herd was maintained by W. W. Warner, who kept his cattle in a warm barn during the winter. At Unalaska a herd of some 20 head was said to obtain its living entirely from pasturage from May to January. L. R. Woodward, then United States commissioner at that place, stated that he kept a few head of cattle, and also that he made a few tons of hay for the animals and was experimenting with silage making. On Simeonofski Island, one of the Aleutian Islands, a few head of cattle were kept by J. C. Smith. At Unalaklik, A. E. Carlson stated that a few cows had been kept there since 1890 and that haymaking was difficult. At Holy Cross Mission, on the Yukon, a bull, one cow, and a heifer calf were maintained.

LOCAL CONSUMPTION OF DAIRY PRODUCTS AND BEEF

Alaska imports from the States more than \$1,000,000 worth of dairy products annually. The dairy products imported in 1925 were valued at \$1,243,871. Under economic conditions in many parts of Alaska such products can be brought into and distributed over the Territory at less cost than they can be produced locally, notwithstanding the abundance of available native feed for dairy cattle. Such was the situation in Alaska when the experiment stations began work with livestock; such is the situation to-day; and such it will be until dairy products can be distributed locally with greater facility and at less cost than is now the case. Dairy products in the form of butter are now produced successfully in the Matanuska Valley, and there is reason to believe that butter can be produced at less cost in this region than it can be shipped from the States.

Half a million dollars' worth of beef is annually shipped from the States to Alaska. In 1925 beef valued at \$575,395 was imported.

INTRODUCTION OF THE GALLOWAY BREED

DEVELOPMENT PRIOR TO 1912

In 1899 an experiment station was opened at Kenai, on the Kenai Peninsula, Cook Inlet, because the place seemed to give promise for successful agricultural development. The first cow of the station was purchased in 1902 from Ivan Bortnowski and was of Siberian origin. A second purchase of the same origin was made in 1903. By 1905 the station had four cows, seven calves, and a yoke of oxen. The animals were maintained on pasture in summer and on hay produced at the station in winter, and were given no grain feed whatsoever.

Kenai soon proved to be better adapted to livestock breeding than to general farming, and special attention was therefore directed toward cattle breeding for the purpose of inaugurating dairy work. A small dairy equipment was purchased, and butter and cheese of fairly good quality were made from the milk of the native cows. However, no market became available for the outlet of the dairy products, and the interests of the Territory were thought to be best served by the introduction of a suitable beef breed. The question naturally arose as to which breed would be well adapted to the rig-

orous climate of the far North. Finally the Galloway was chosen as the breed giving the most promise of success.

The Galloway breed originated upward of 300 years ago in southwest Scotland, where the climate is similar to that of the coast region of Alaska. These animals were therefore thought to be well adapted to Alaska. The early Scotch breeders did not pamper their stock. The animals were not stall fed, but were bred to rustle for themselves the year around, or they were fed from stacks and at best in open sheds when the snow prevented grazing. Typical Galloways which have not been pampered by stall feeding and a too-refined domestication take the weather as it comes, even facing cold, rainy storms. Galloways are provided with a thick undercoat of hair, as a protection against cold, and with a heavy outer coat of long hair, which readily sheds water. Galloway cattle are fine rustlers, excelling in this respect the Holstein-Friesians and the Shorthorns. Galloways are short of leg, low set, and of medium depth, and compare favorably with the larger beef breeds, including the Aberdeen Angus, the Shorthorn, and the Hereford. The Galloways are hornless, which is an advantage in handling when the animals must be shipped in crowded quarters from place to place.

The first Galloways, consisting of 11 head—2 males and 9 females—were introduced into Alaska in 1906. Of this stock, 1 male and 6 females were sent to Kenai, and the other animals were temporarily placed on Wood Island, 2 miles from Kodiak. The animals thrived, fleshed up well, and maintained their docile character, behaving in all respects as they had on the farm where they were bred.

In 1907 it was found that while both native and introduced cattle could be maintained exclusively on the pastures at Kenai, transportation facilities for shipping the animals to and from the station had not improved. At this stage of its development Kenai was hardly the place to raise livestock on a large scale. The animals could be kept at small cost, but they could not be shipped out. Wharves on the inlet were lacking, boats could not anchor near shore on account of the high tides and the swift currents, and incoming stock had to be lowered into the water from boats and allowed to swim ashore. The cattle were therefore transferred in the summer to the Kodiak station, Kodiak Island, which is representative of the cattle breeding and grazing country of southwestern Alaska.

The Galloway herd at Kodiak was augmented by the purchase in 1907 of an additional bull and 18 females, 7 of which were yearlings, 6 2-year-olds, and 5 cows. Two of the cows, the imported Lady Douglas, No. 23478, and Fidelia, No. 24210, were of outstanding merit. Fidelia was an excellent animal and a fine milker. Her calf, Alexander, No. 28844, which was purchased with her, was used a year later as a herd bull. The influence of his strain is shown in the herd to the present day, not only in the purebred stock but also in the crossbreds developing later. Fidelia Douglas Best, No. 48150, of the Galloway breed, is a granddaughter of the old cow Fidelia and is proving to be a phenomenal milker. In July, 1926, she gave 1,204 pounds of milk containing nearly 6 per cent butterfat. (Fig. 1.)

The livestock at the Kodiak station in 1907 numbered 50 head, of which 27 were females, 3 were males, and 20 were calves. The imported bull, Henry of Lochside, No. 23525 (8809), the first sire in the

herd, was purchased in 1906 and begot superior offspring. All the animals in the herd were tested for tuberculosis by a Government inspector before they were purchased.

As time went on it became evident that a hardy beef breed could be maintained cheaply on the pastures of southwestern Alaska. The dominating idea in introducing Galloways was to aid in the development of the country by furnishing breeding stock to settlers, or to graziers in the States who desired to utilize the rich grasslands of southwestern Alaska. The country progressed more slowly than was anticipated, however. The World War had a blighting influence on Alaska and considerably reduced the population, thousands of young, unattached men from the mines, the homesteads, and the cities volun-

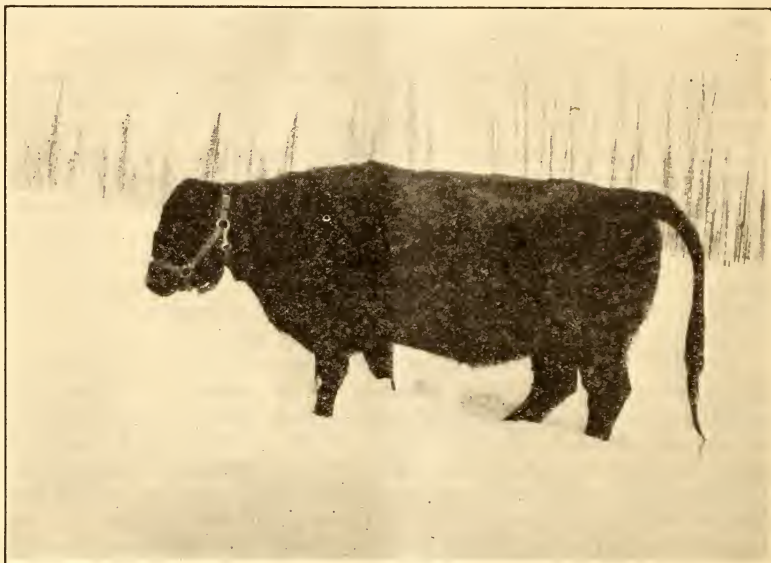


FIG. 1.—Fidelity Douglas Best, No. 48150, born April 18, 1920. A phenomenal milker

teering for service in the Army and never returning. Industries which were expected to provide a market for the farming and grazing products failed to develop, and as a result breeding stock of the beef type was not in demand for the pastures of southwestern Alaska. Eventually there will be demand for beef cattle for the pastures of the Alaska Peninsula and the Aleutian Islands but not for some years to come. On the other hand, hardy milkers for family use were in strong demand. It was therefore decided to change the character of the herd somewhat and develop an all-purpose animal.

ERUPTION OF MOUNT KATMAI AND SHIPMENT OF THE HERD TO WASHINGTON STATE

Considerable progress was being made at Kodiak through selective breeding in the development of a milking strain in the Galloway herd to meet the requirements of Alaskan settlers. Comparatively few Galloways are good milkers. The heifers proving to be fair

yielders of milk were retained and the poor milkers were sold. To further the work, 11 head of the best milkers in the breed obtainable in the States were purchased in May, 1912, and shipped to Seattle for transshipment to Kodiak. The cattle were about to be sent to Kodiak when word was received that a volcanic eruption was in progress in that region. The dormant volcano known as Mount Katmai, on the Alaska Peninsula, nearly 100 miles from the station, had become active. The ashes were carried by a west wind to Kodiak, where they covered the ground to a depth of 18 inches. All pasture was destroyed for the time, and the herd at the station was without feed and on the verge of starvation. The eruption made it necessary to abandon work at the station and find quarters where the herd could be fed. Wintering the herd in Alaska would have cost three times as much as shipping the animals to and maintaining them in a country where feed is abundant and cheaper. Accordingly the cattle were sent to Toppenish, Wash., where, with the dairy animals awaiting shipment at Seattle, they were wintered under the care of a superintendent. It was discovered too late to prevent harm that cattle had died of blackleg some few years earlier on the very pasture that was leased by the station. A number of the station calves and young stock contracted the disease and died, and the remaining herd had to be moved elsewhere. In the spring of 1913 they were sent to Chehalis, Wash., on the west side of the mountains, where they prospered. Many calves were dropped while the herd was in Chehalis, and the herd finally became too large to handle with the funds available for the experiment. In December, 1913, 64 head were sold at public auction with the guarantee that they were sound.

REVIVAL OF PASTURES AT KODIAK AND RETURN OF THE HERD

In the meantime the rains of two years had settled the ashes on the Kodiak station pastures to a depth of between 6 and 7 inches. The ashes absorbed and held the moisture and upon eventually drying out formed great cracks. The native grasses broke through these cracks with such renewed vigor that early in the summer of 1914 the pastures were sufficiently reestablished to justify the return of the herd to the station. The animals, numbering 50 head, arrived safely on July 25, 1914. The revived grasses were lush, and the cattle thrived on them.

DEVELOPMENT OF TUBERCULOSIS

In the summer of 1916 an old cow developed unmistakable clinical symptoms of tuberculosis and had to be slaughtered. The post-mortem examination confirmed the clinical symptoms, and arrangements were at once made with the Seattle office of the Bureau of Animal Industry, United States Department of Agriculture, to have the herd tested.

Out of a herd of 54 mature animals, 21 reacted and were condemned as tuberculous, 8 were classed as suspicious, and 25 were passed as sound. The source of the disease could not be determined. The herd had not been allowed to come in contact with other animals from the time it left Kodiak two years earlier until it was returned. The disease may have been contracted in the stockyards in Seattle,

or in the cattle cars in which the animals were transported from Chehalis to Seattle. The affected animals were among the finest appearing in the herd. They showed no clinical symptoms of tuberculosis. All reactors to the test were isolated at Kalsin Bay (fig. 2), 15 miles from Kodiak, and only those animals which passed the test were kept on the reservation at Kodiak.

All the reacting cows eventually showed clinical symptoms of tuberculosis. During the next four years (1917-1920) one cow after another gradually failed in health and had to be slaughtered. The



FIG. 2.—Part of the tuberculous herd at Kalsin Bay

cattle have been annually tested for tuberculosis since the outbreak of the disease, and now it is certain that the herd is again sound.

TREATMENT OF CALVES OF REACTING DAMS

It was decided to attempt to raise healthy calves from reactors. A well-bred reacting bull was placed in the quarantined herd of females at Kalsin Bay and breeding was allowed to proceed as under normal conditions. Thirty calves were dropped by this herd of reactors between 1916 and 1920. Every calf was tested when it was 6 months old, but none showed signs of tuberculosis.

The calves were allowed to remain with their dams for the first 24 hours after birth in order that they might draw off the colostrum from the udders. The young animals were then removed to separate quarters and fed on pasteurized milk from the reacting dams. The experiment proved conclusively that healthy calves can be raised from tuberculous parents and that highly prized reactors need not be destroyed for several years. Reacting animals can not be cured, but they can be isolated, and if given sufficient care, bred for the production of healthy offspring.³

³ For further particulars concerning the experiment, the reader is referred to the following: GEORGESON, C. C. ERADICATION OF TUBERCULOSIS IN CATTLE AT THE KODIAK EXPERIMENT STATION. Alaska Agr. Expt. Stas. Bul. 5, 11 p., illus. 1924.

FOUNDATION STOCK

To enable the future historian of the herd to trace relationships between the animals used as foundation stock in the Galloway herd at the Kodiak station, Table 1 is given, showing their names, sex, parents, breeders, and sellers. (Figs. 3, 4, and 5.)



FIG. 3.—Henry of Lochside, No. 23525 (8809), the first sire in the Galloway herd at Kodiak



FIG. 4.—Ranger of Seven Oaks, No. 45044, of the Galloway herd



FIG. 5.—Aberdeen, No. 2646, of the Galloway herd. Purchased in Canada

TABLE 1.—*Foundation animals of the Galloway breed at the Kodiak station, their parents, breeders, and sellers*

PURCHASED IN 1906

Foundation stock	Sex	Sire	Dam	Breeder	Seller
Henry of Lochside, No. 23525 (8809).	Male...	Mackenzie of Kilgushanty, No. 23523 (7863).	Nellie of Lochside, No. 16032.	The Misses Shaw, Lochside, New Galloway, Scotland.	F. P. Wild, Cowgill, Mo.
Lewanda, No. 18075.	Female.	Asher, No. 11375.	Prairie Belle V, No. 16657.	F. P. Wild, Ovid, Mo.	Do.
Alaska Maid, No. 28185.	...do...	Graham of Avondale, No. 20768.	Lewanda, No. 18075.	F. P. Wild, Cowgill, Mo.	Do.
Ethel of Wildwood, No. 24998.	...do...	Doctor of Wavertree, No. 16770.	Lewanda, No. 18075.	...do...	Do.
Esmerelda, No. 26863.	...do...	Foreman of Wavertree, No. 15985.	Sonsy Lass V, No. 14828.	W. M. Brown & Son, Carrollton, Mo.	W. M. Brown & Son, Carrollton, Mo.
Emotion No. 26414.	...do...	Majestic of Wavertree, No. 11901.	Grace Brown, No. 18390.	...do...	Do.
Banshee, No. 23176.	...do...	Gay Walter, No. 16884.	Pleione, No. 22044.	...do...	Do.
Banshee of Kenai, No. 31971.	...do...	Chief II of Stepford, No. 23513 (8336).	Banshee, No. 23176.	...do...	Do.
Beauty Spot, No. 21065.	...do...	Springwater Prince, No. 10651.	Peggie Q, No. 12860.	...do...	Do.
Maisie, No. 22040.	...do...	...do...	Gipsy Queen IV, No. 12854.	...do...	Do.
Arimitta, No. 16713.	...do...	...do...	Peggie Q, No. 12860.	...do...	Do.
Extirpator, No. 27242.	Male...	Cock Robin, No. 23180.	Bijou, No. 23177.	...do...	Do.

TABLE 1.—*Foundation animals of the Galloway breed at the Kodiak station, their parents, breeders, and sellers—Continued*

PURCHASED IN 1907

Foundation stock	Sex	Sire	Dam	Breeder	Seller
Alexander, No. 28844.	Male...	Pat Ryan of Red Cloud, No. 20039.	Fidelia of C. H., No. 24210.	G. W. Lindsey, Red Cloud, Nebr.	G. W. Lindsey, Red Cloud, Nebr.
Fidelia of C. H., No. 24210.	Female.	Decoy of Wavertree, No. 17094.	Bella of Boreland, No. 9269.	G. M. Kellam & Son, Topeka, Kans.	Do.
Mollie C. of Red Cloud, No. 26239.	...do...	Rex of Rosehill, No. 21910.	Cherrydale of Red Cloud, No. 16336.	G. W. Lindsey	Do.
Mollie of Kodiak, No. 31978.	...do...	Bugar of Graybill, No. 21581.	Mollie C. of Red Cloud, No. 26239.	...do...	Do.
Maud of Red Cloud, No. 26246.	...do...	Rex of Rosehill, No. 21910.	Blossom of Red Cloud, No. 17566.	...do...	Do.
Nellie F. of Red Cloud, No. 23944.	Female	Senator Mac, No. 17426.	Verda of Red Cloud, No. 17561.	...do...	Do.
Omega of Red Cloud, No. 29380.	...do...	Pat Ryan of Red Cloud, No. 20038.	Clove of Red Cloud, No. 22189.	...do...	Do.
Only of Red Cloud, No. 29391.	...do...	...do...	Dina of Red Cloud, No. 16335.	...do...	Do.
Old Lady, No. 29379.	...do...	...do...	Peggie of Red Cloud, No. 22187.	...do...	Do.
Our Mary, No. 29389.	...do...	...do...	Mary of Red Cloud, No. 29388.	...do...	Do.
Omera, No. 29386.	...do...	...do...	Vena of Red Cloud, No. 17564.	...do...	Do.
Miss of Red Cloud, No. 26245.	...do...	Rex of Rosehill, No. 21910.	Ruth of Red Cloud, No. 20032.	...do...	Do.
Lady Douglas, No. 23478 (18091)	...do...	Baron Douglas of Castlemilk, (7333).	Silky of the Isles, (12412).	J. Irving & Sons, Isle of Dalton, Locherbie, Scotland.	O. H. Swigart, Farmer City, Ill.
Emeline, No. 28675 (19200).	...do...	Mackinzie II, of Kilquhanity (8473).	Emma IV (16522).	John McNaught, Scraggiehall, New Galloway, Scotland.	Do.
Glen Rose of Avondale, No. 26822.	...do...	Campfollower of Stepford, No. 23512 (7476).	Glen Rosa IV, No. 5424.	O. H. Swigart, White Heath, Ill.	Do.
Norma of Maples, No. 26222.	...do...	Campfollower of Stepford, No. 23512 (7476).	Norma III of Avondale, No. 15192.	O. H. Swigart, Champaign, Ill.	Do.
Bassonio's Maid, No. 19823.	...do...	Glen Bassonio, No. 11769.	Nether Maid of Corn Belt, No. 15955.	Marion Parr, Harristown, Ill.	Marion Parr, Harristown, Ill.
Lady Semiramis, No. 26754.	...do...	Lord Wedholm, No. 15700 (6587).	Semiramis of Corn Belt, No. 17360.	...do...	Do.
Alaska Lady, No. 30151.	...do...	Black Prince of Durhamhill, No. 23511.	Lady Semiramis, No. 26754.	...do...	Do.
Wedholme's Maid, No. 22132.	...do...	Lord Wedholm, No. 15700 (6587).	Nether Maid of Corn Belt, No. 15955.	...do...	Do.
Lovely Maid II, No. 26865.	...do...	Black Prince of Durhamhill, No. 23511 (6846).	Bassonio's Maid No. 19823.	...do...	Do.

PURCHASED IN 1912

Bertha, No. 34809	Female.	Nimbus of Rivers, No. 26600.	Adele, No. 30454.	Clinton Quinby, Wilmington, Ill.	Clinton Quinby, Wilmington, Ill.
Adele, No. 30454.	...do...	Frank of Ashton, No. 21584.	Poppy of Ashton, No. 13869.	A. F. Craymer, Morris, Ill.	Do.
Ruth Standard, No. 32211.	...do...	Scottish Standard of Drumlanrig, No. 23516 (7375).	Mollie Elrig II, No. 27153.	Straub Bros., Avoca, Nebr.	Straub Bros., Avoca, Nebr.
Fantenil II of Oteo, No. 28636.	...do...	Norseman of Lochenkit, No. 21229 (7737).	Fantenil of Wavertree, No. 18744.	...do...	Do.

TABLE 1.—*Foundation animals of the Galloway breed at the Kodiak station, their parents, breeders, and sellers—Continued*

PURCHASED IN 1912—Continued

Foundation stock	Sex	Sire	Dam	Breeder	Seller
Fantenil of Alaska, No. 37629.	...do...	Eloquent, No. 35186.	Fantenil II of Otoe, No. 28636.	Straub Bros., Avoca, Nebr.	Straub Bros., Avoca, Nebr.
Hazel of Otoe, No. 32269.	...do...	Mahomet, No. 28121.	Hannah V of Hope, No. 25168.	...do...	Do.
Lady May of Otoe, No. 32771.	...do...	...do...	Lady May, No. 21084.	...do...	Do.
Carnot of Kodiak, No. 39139.	Male...	Carnot, No. 36058.	Lady May of Otoe, No. 32771.	...do...	Do.
Locksley Forfeit, No. 26105.	Female.	Mario of Castle-milk, No. 15054.	Locksley Fidget, No. 16898.	A. P. Marsh, Westfield, Iowa.	Isaac Lincoln, Aberdeen, S. Dak.
True Beauty, No. 29441.	...do...	Buceleuch of Drumlairig, No. 19752.	Abness of Valleyview, No. 17013.	John Nicol, Pioneer, S. Dak.	John Nicol, Pioneer, S. Dak.
Hattie B, No. 32416.	...do...	Brutus, No. 21057.	Pansy Beauty, No. 29440.	...do...	Do.
Helen B, No. 32420.	...do...	Norseman of Lochenkit, No. 21229 (7737).	Locksley June, No. 22957.	A. P. Marsh	Do.
Bon Accord Dairymaid, No. 37370.	...do...	Grandee of Rivers, No. 28774.	Hattie B, No. 32416.	John Nicol	Do.
Alaska Buttercup, No. 37371.	...do...	...do...	Helen B, No. 32420.	...do...	Do.
May Flower, No. 37367.	...do...	...do...	True Beauty, No. 29441.	Taylor & Callan, Pioneer, S. Dak.	Do.
Maggie of Sherburn, No. 37327.	...do...	Peerless of Ophir, No. 13937.	Lady Nina III, No. 14743.	C. D. McPherson, Fairfield, Iowa.	R. C. Alsworth, Sherburn, Minn.

PURCHASED IN 1919

Ranger of Seven Oaks, No. 45044.	Male...	Cornharrow of Crigneston, No. 38298.	Irene of Seven Oaks, No. 33190.	W. M. Brown, Carrollton, Mo.	W. M. Brown, Carrollton, Mo.
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PURCHASED IN 1923

Aberdeen, No. 2646.	Male...	Picador Jr. of L. F. (2402).	Riverside Mary (2416).	Richard Wallace, C. D.	Highriver, Alberta, Can.
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INTRODUCTION OF THE HOLSTEIN-FRIESIAN BREED

By 1916 the heifers which had been bred from the best milkers among the Galloways proved to be no better yielders of milk than is the average Galloway cow. The development by selective breeding of a milking strain in the breed was found to require a long time. To shorten the process, therefore, some Holstein-Friesian cattle were purchased in the summer of 1916 for the purpose of making reciprocal crosses between the breeds. From the resulting crossbreds selections were to be made of individuals combining the hardiness and rustling qualities of the Galloways with the superior milking qualities of the Holstein-Friesian. The Holstein-Friesians were held in Washington State until the early summer of 1917 because of the discovery of tuberculosis in the Galloway herd at Kodiak, and reached Kodiak on June 8. Crossbreeding began at once.

The Holstein-Friesians are not so well adapted to the climate of the Alaska coast region as are the Galloways, the cold storms visibly

affecting them and causing a very perceptible drop in the flow of milk. The Holstein-Friesians have to be housed earlier than the Galloways and kept under shelter later in the spring. They are not active rustlers for feed; nevertheless they have done fairly well.

FOUNDATION STOCK

Table 2 gives the names of the Holstein-Friesians in the foundation herd at the Kodiak station, their sex, parents, breeders, and sellers. (Fig. 6.)

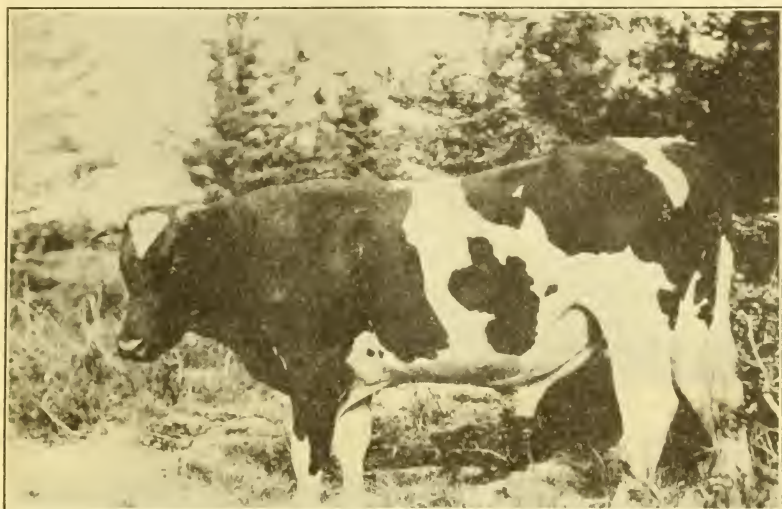


FIG. 6.—Holstein-Friesian herd bull, Chimacum Sir Quirinus Cornucopia, No. 176468

TABLE 2.—*Foundation animals of the Holstein-Friesian breed at the Kodiak station, their parents, breeders, and sellers*

PURCHASED IN 1916

Foundation stock	Sex	Sire	Dam	Breeder	Seller
Cascade Betsy I, No. 154963.	Female.	Sir Johanna Ruth Payne, No. 53055.	Bessie Lassie, No. 61890.	Wm. Todd & Son.	Wm. Todd & Son, North Yakima, Wash. Do.
Cascade Betsy II, No. 260870.	do.	Johanna Colantha Champion, No. 94987.	Cascade Betsy, No. 154663.	do.	do.
Miss Gladys Cornucopia No. 336455.	do.	Chimacum Gladys, No. 154227.	Ononis Cornu- copia, J. L. No. 53453.	Chas. Eldridge.	Chas. Eldridge, Chimacum, Wash. Do.
Gladys Mercedes Banks, No. 336456.	do.	Duke of Deer- banks No. 94582.	Gladys Mercedes, No. 76313.	do.	do.
Grandview Payne Piebe Johanna, No. 233446.	do.	Sir Payne Johanna DeKol II, No. 103178.	Honor Bright Piebe DeKol		W. W. Butler, Grandview, Wash.
Chimacum Sir Quirinus Cornu- copia, No. 176468.	Male.	Quirinus Cornu- copia No. 60751.	Woodcrest Mand, No. 89753.	Wm. Bishop.	Wm. Bishop Chimacum, Wash.

PURCHASED IN 1921

Shadford Segis Hartog II, No. 352564.	Male.	Shadford Hartog, 284822.	Segis No.	Hazel Parthena Hartog, No. 142307.	Carnation Stock Farms.	Carnation Stock Farms, Seattle, Wash.
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GALLOWAY-HOLSTEIN-FRIESIAN CROSSBREDS

The Galloway has been prepotent in the Galloway-Holstein-Friesian crossbreds. The second and third generations retain the color and hornless characteristics of the Galloway. The young ani-

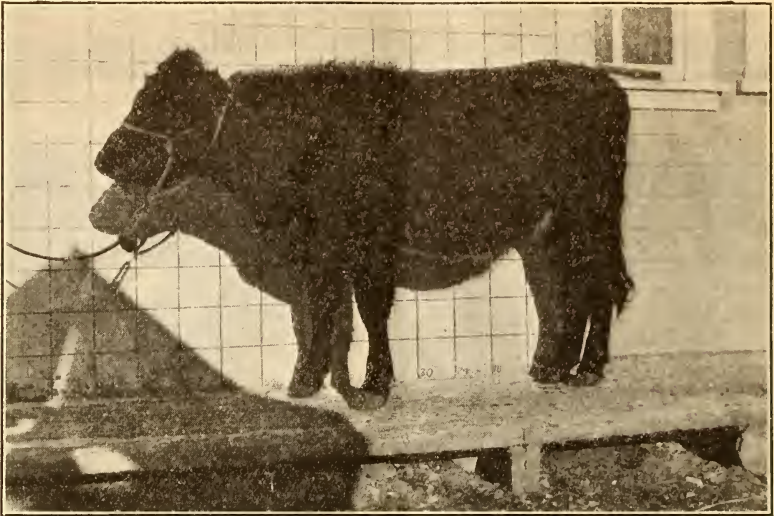


FIG. 7.—Crossbred heifer No. 30. Sire, Galloway bull, Ranger of Seven Oaks; dam, Holstein-Friesian cow, Miss Gladys Cornucopia. This heifer has a better form than have some of the crossbreds

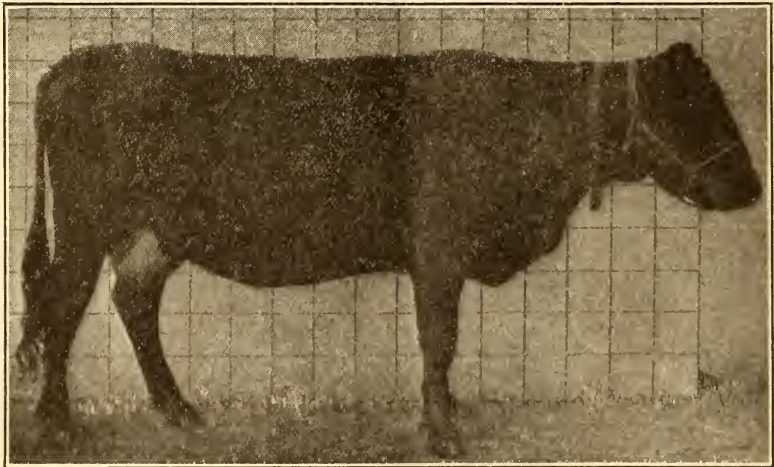


FIG. 8.—Crossbred cow No. 3. Sire, Holstein-Friesian; dam, Galloway cow, Fidelia IV of Kodiak

mals are not short of leg or blocky like the Galloways. They have not the straight backs of the Galloways. The crossbreds have short, sleek hair like the Holstein-Friesians, and a rangy body which is narrow over the withers, a high rump, and a thin neck. The crossbreds are fine appearing, but not handsome. (Figs. 7, 8, 9, and 10.)

The object for which crossbreeding was undertaken has been partly attained. In milking qualities the crossbreds are intermediate between the Holstein-Friesians and the Galloways. They are better



FIG. 9.—Typical first generation crossbred in the Galloway-Holstein-Friesian herd

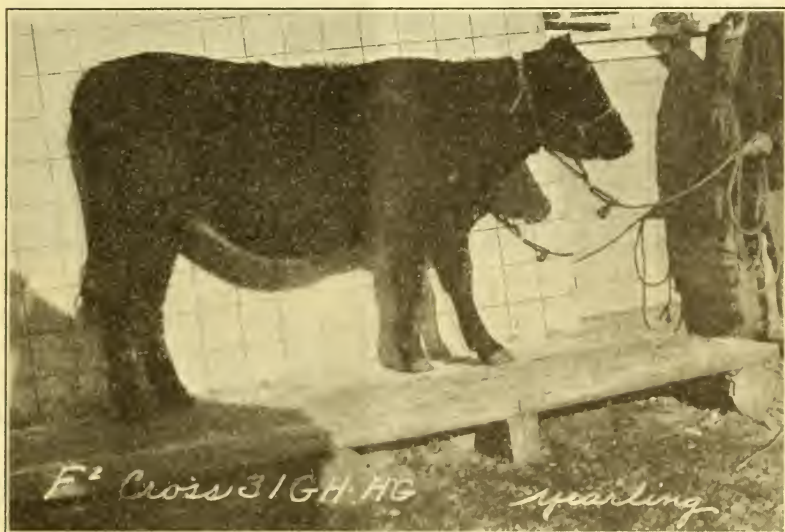


FIG. 10.—Second generation crossbred in the Galloway-Holstein-Friesian herd. In conformation somewhat better than is the first generation

in milk yield than is the Galloway, and the milk has a higher content of butterfat than has that of the Holstein-Friesian. The crossbreds have other qualities entitling them to consideration as foundation dairy stock in Alaska. They are better rustlers than are either

the Milking Shorthorns or the Holstein-Friesians, and continue to rustle in cold, stormy weather. The young animals also maintain their weight better during the trying period of spring when they are turned out to graze and the pastures are scant. Further proper selection and breeding should eventually give to Alaska a suitable herd of cattle which will have the desirable hardy and milking qualities of the two original breeds.

INTRODUCTION OF THE MILKING SHORTHORN BREED

Work at the Matanuska station was begun early in the spring of 1917. This station is located in the heart of the fertile Matanuska Valley, on the line of the Government railway, 36 miles from Anchorage and 300 miles south of Fairbanks. The livestock industry needed fostering in the Matanuska Valley, where the agricultural areas seem

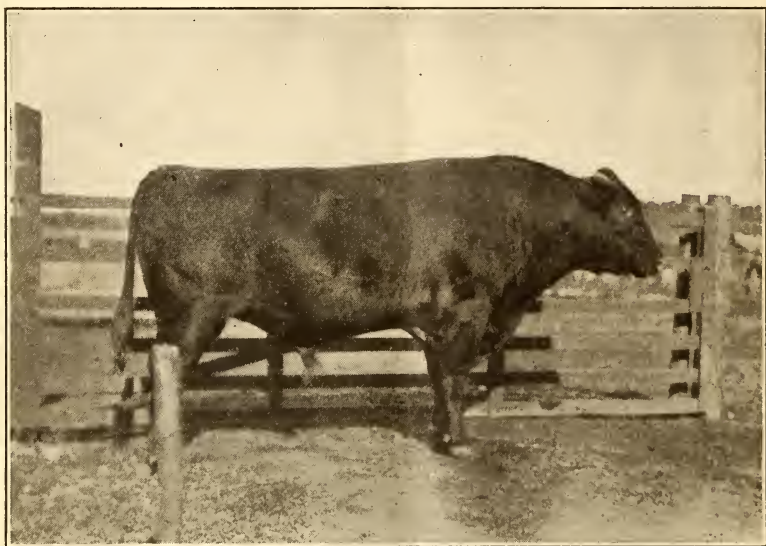


FIG. 11.—Shorthorn bull, Waterloo Heir, No. 929750

to be very well adapted to the raising of cattle. Dairy products and beef could easily be distributed to all points reached by the railway as well as to coast points via Seward. It was planned, therefore, to introduce livestock at the station as soon as sufficient of the heavily timbered land could be cleared to raise feed for the animals. The Galloways and the Holstein-Friesians were not considered the best breeds for the region because the Galloways are not dairy cattle and the Holstein-Friesians were not believed to be hardy enough to withstand the severe winters. The crossbreeds at Kodiak had not as yet sufficiently established themselves to prove their merits. The Milking Shorthorn was considered the breed best suited to the environment. Accordingly in 1920 a small herd of Milking Shorthorns of good conformation was introduced at the station. It was confidently expected that their introduction would greatly benefit the farming

interests in the Matanuska Valley, where dairying could be combined with stock raising. The Milking Shorthorn is a fairly hardy breed and gives from 8,000 to 10,000 pounds or more of milk yearly per cow. When the profitable milking period has ended the cows can be fattened and slaughtered for marketing.

Because of the great distance, the Alaskans who desire to purchase livestock in the States are unable to make personal selections. The station therefore deemed it proper to take a lead in introducing cattle to demonstrate to the farmers what can be done in this line and also to aid in developing a good grade of dual-purpose cattle by selling surplus stock at moderate prices to farmers throughout the valley.

The breed has been maintained independently of the Galloways, the Holstein-Friesians, and the crossbreds, but at present it is a question whether the crossbreds are not better adapted to Alaskan conditions than are the Milking Shorthorns.

FOUNDATION STOCK

Table 3 gives the names of the Milking Shorthorns in the foundation herd at the Matanuska station, their parents, breeders, and sellers. (Fig. 11.)

TABLE 3.—*Foundation animals of the Milking Shorthorn breed at the Matanuska station, their parents, breeders, and sellers*

PURCHASED IN 1920

Foundation stock	Sex	Sire	Dam	Breeder	Seller
Lady Belle, No. 824368.	Female.	Glenside Dairy King, No. 443881.	Glenside Lady Belle, No. 519518.	D. D. May.....	E. C. Holland & Son, Milton, Iowa.
Dairymaid 23d, No. 713840.	do....	Chief Dairyman, No. 435649.	Laura 24th, No. 208324.	E. C. Holland & Son, Milton, Iowa.	Do.
Dairymaid 33d, No. 867209.	do....	do....	Pet 8th, No. 172312.	do....	Do.
Starlight 7th, No. 580639.	do....	Glenside King, No. 580639.	Starlight 3d, No. 179762.	do....	Do.
Waterloo Heir, No. 929750.	Male....	Conjuror's Heir, No. 647256.	Waterloo Rose, No. 182492.	do....	Do.
Lucinda's Lady, No. 565282.	Female.	Chief of Glenside, No. 285899.	Lucinda, No. 158659.	W. C. Davies....	A. E. Palmer, East Grand forks, Minn.

DAIRY YIELDS IN 1926

The fact having been amply demonstrated that hardy family cows adapted to the climate can be developed at Kodiak, it was decided to transfer the Holstein-Friesians and the crossbred Holstein-Galloways to Matanuska to learn how they would thrive there. The cattle reached Matanuska in September, 1925. At that time there were a sufficient number of the crossbred cows to permit comparing their merits with those of the Holstein-Friesians and the Milking Shorthorns, when the three breeds were kept under identical conditions, although the ages and number of lactation periods varied. By January, 1926, all three breeds were practically on a par so far as first-class conditions and environment were concerned.

Milk records were kept of every cow in the herd. The milk was weighed as soon as it was drawn. The data showing the performance of each group of cows for the period January 1 to December 31, 1926, follow. The 12 months cover a lactation period, but in many instances the record of the first few months covers a closing lactation period, and the record of the last 8 or 10 months a new lactation period.

In the Shorthorn herd seven cows gave milk during a total of 68 months, or an average of 9.7 months. During this period the seven cows yielded a total of 32,542 pounds of milk. The average yield of milk per cow for the herd was 4,649 pounds, and the average percentage of butterfat was 3.81, which is equal to 177 pounds.

In the Holstein herd four cows gave milk during a total of 32 months, or an average of 8 months. The total yield of the four cows was 17,046 pounds, which is an average per cow of 4,261 pounds. The average butterfat percentage was 3.53, which is equal to 150 pounds.

In the Galloway-Holstein crossbred herd 13 cows gave milk for a total of 102 months, or an average of 7.85 months. These 13 cows yielded a total of 52,197 pounds, which gives an average per cow for the herd of 4,015 pounds. The average percentage of butterfat was 3.88, which is equal to 155 pounds.

Six of the crossbred cows were heifers with their first calves and therefore had by no means attained full production such as would be made by cows in their prime. The Milking Shorthorns gave the highest average yield of milk per cow, with an intermediate percentage of butterfat. The Holsteins ranked second in average production of milk, but with the lowest butterfat content. The crossbred animals averaged lowest in total milk produced, but were highest in percentage of butterfat.

These data indicate at least a favorable comparison of the crossbreds with the two purebred herds of Milking Shorthorns and Holstein-Friesians.

INTRODUCTION OF YAK

In 1919 the stations obtained from the Canadian Government a pair of yak, then 2 years old, for the purpose of crossbreeding them with Galloway cattle for the production of a hardy type of bovine, which can be used for meat and milk, as well as for domestic service. They were offspring of yak brought from England some years previously and bred at the Rocky Mountain Park at Banff, Canada, and later also at the Wainwright National Park in Alberta.

Yak and cattle are very commonly crossed in Asia, where the former thrives in a wild or domesticated state at elevations of between 10,000 and 16,000 feet. It is the domestic bovine of Thibet and adjoining regions of India, Mongolia, Siberia, and China. The animals are hardy, inured to extreme cold, and not particular as to their food and shelter. Nature has provided them with short legs and a heavy coat of hair which fringes the shoulders and the side, and is especially long on the lower part of the neck and around the belly.

The female yak proved to be a nonbreeder. The male yak was therefore placed with some Galloway cows, which eventually dropped six hybrids, five of which were females. In 1923 two more female

yaks were obtained from the Canadian Government. One of these dropped a heifer calf in 1924. In vigor, as indicated by size, the hybrid heifers are superior to full-blooded Galloway calves of about the same age.



FIG. 12.—Polled yak bull, received from the Canadian Government in July, 1919. Sire of all the yak-Galloway hybrids



FIG. 13. Horned yak cow, received from the Canadian Government in September, 1923. Age unknown

The yak and yak-Galloway hybrids at the stations on January 1, 1927, included: Three yak, a polled bull, which was received July, 1919, when approximately 2 years old (fig. 12); one horned cow, received September 24, 1923 (age unknown) (fig. 13); and one heifer, born April 12, 1924 (fig. 14); and six Galloway-yak hybrids.

Hybrid No. 1 (fig. 15) was born May 9, 1924. This polled animal is the result of a cross between a polled yak bull and Fidelia Queen, No. 48152, and was bred October 14, 1925, to a polled yak. Her first calf, a heifer, was born July 5, 1926. She is polled and is three-



FIG. 14.—Heifer yak, born April, 1924. Bred to Galloway bull, Mollie Boy, September, 1926



FIG. 15.—Yak-Galloway hybrid No. 1. Female. Sire, polled yak; dam, Galloway cow Fidelia Queen, No. 48152

fourths yak. Hybrid No. 2 (fig. 16), a polled heifer, was born November 30, 1924. She was sired by a polled yak out of Fidelia Douglas Best, No. 48150. Hybrid No. 3 (fig. 17), a polled heifer, was born February 6, 1925. She is the result of a cross between a



FIG. 16.—Yak-Galloway hybrid No. 2. Female. Sire, polled yak; dam, Galloway cow Fidelia Douglas Best, No. 48150



FIG. 17.—Yak-Galloway hybrid No. 3. Female. Sire, polled yak; dam, Galloway cow Fidelia Fair



FIG. 18.—Yak-Galloway hybrid No. 4. Male. Sire, polled yak; dam, Galloway cow Fidelia Fair



FIG. 19.—Yak-Galloway hybrid No. 5. Male. Sire, polled yak; dam, Galloway cow Fidelia Douglas Best

polled yak and Fidelia Fair. Hybrid No. 4 (fig. 18), a polled bull, was born January 17, 1926, and was sired by a polled yak out of Fidelia Fair. Hybrid No. 5 (fig. 19), a polled bull, the product of a polled yak crossed with Fidelia Douglas Best, was born June 4,



FIG. 20.—Yak-Galloway hybrid No. 6. Female. Sire, polled yak; dam, hybrid No. 1

1926. Hybrid No. 6 (fig. 20), a polled heifer, is the result of a cross between a polled yak and Hybrid No. 1 and was born July 5, 1926. She is three-fourths yak.

The animals are fine appearing, and it is hoped that they can be used as the foundation for the development of a breed which is especially well adapted to the pastures north of the Arctic Circle.

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